University of California
Lawrence Livermore National Laboratory

Nonproliferation, Arms Control, and International Security Directorate

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NAI's activities in counterterrorism and incident response prepare the technologies and operational capabilities needed to deal with WMD threats or actual use

Mission

Our activities in counterterrorism and incident response focus on the application of technologies and operational capabilities to deal with WMD emergencies or terrorist incidents. We work with the Department of Energy, the Los Alamos and Sandia national laboratories, and other government agencies involved in responding to WMD threats and incidents.

Nuclear Incident Response

Livermore's expertise in nuclear weapons, nuclear materials, and weapon technology is integral to the nation's ability to respond to nuclear emergencies or incidents. We are a key participant in the Department of Energy's multilaboratory Accident Response Group, Nuclear Emergency Search Team, Radiological Assistance Program, and Federal Radiological Management Assistance Capability. The Laboratory applies its knowledge of nuclear weapons to the broader issues of countering the use of nuclear materials as a weapon of mass destruction or as a terrorist threat. Our Threat Credibility Assessment Program has provided technical, operational and behavioral assessments of nuclear extortion threats for almost 20 years. We also provide a central database for the analysis and tracking of publicly disclosed smuggling of nuclear materials.

Chemical and Biological Incident Response

To address the threat posed by chemical and biological agents, the Department of Energy recently initiated the Chem/Bio Nonproliferation Program to exploit the national laboratories' technical expertise. Livermore is contributing in six areas: bioinformation, point detection, standoff detection, transport and fate, decontamination, and systems analysis.

Although this program has just begun, we have already demonstrated significant advances in field detection and identification of biological agents. In October 1996, a team of LLNL scientists and engineers took part in a Joint Field Trial held at Dugway, Utah. In this exercise, participating teams analyzed 1600 samples over a period of ten days in a field laboratory setting. Four simulant materials were used, representing typical biological weapon materials. We tested two instruments, a mini-flow cytometer and a mini-PCR (polymerase chain reaction) instrument. We were extremely pleased with our results, particularly since this was the first use of a mini-PCR instrument in a field test.

WMD Terrorism

A growing threat is posed by WMD terrorism. Livermore's expertise in nuclear detection, explosives handling, remote sensing, and other technologies is being applied to countering this threat. Working with other government agencies, we are developing capabilities for threat assessment and effects prediction, techniques for disabling terrorist devices, and technologies for early detection and identification of nuclear, chemical, and biological agents.

Forensic Science

The LLNL Forensic Science Center is developing new technologies to tackle the difficult problems of nuclear attribution, especially as applied to nuclear smuggling. Even amateurish attempts to disguise materials requires sophisticated forensics to decipher. We are developing microanalytical forensic techniques that can be transferred to field use by federal agencies and local law enforcement agencies. Our ability to combine a broad range of technical disciplines has already resulted in the development of new field instruments and sample collection techniques.

Recent Accomplishments

- Successful demonstration of a mini-flow cytometer and a mini-PCR instrument for field detection and identification of biological agents.
- Demonstration of large, high-speed, field-deployable shape charges.
- Development of new field collection equipment for forensic analysis using surface-coated fibers.
- Deployment of incident response staff in support of the International Olympics in Atlanta and the U.S. Presidential Inauguration.

Benefits to the Nation

The Counterterrorism and Incident Response Division serves as the focus at LLNL for national and international emergency response to nuclear, chemical, or biological incidents. We apply Livermore's cutting-edge science and technology in the development of new techniques and methods to counter terrorist use of agents of mass destruction.

Contact

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